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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/586,656	06/03/2000	Takeshi Sano	00-371	7528

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09/05/2003

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EXAMINER

HODGES, MATTHEW P

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/586,656

Applicant(s)

SANO, TAKESHI

Examiner

Matt P Hodges

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 59-79 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 59,64-69 and 71-79 is/are rejected.
- 7) ☒ Claim(s) 60-63 and 70 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

The Amendment, filed on 05/05/2003, has been entered and acknowledged by the Examiner.

Cancellation of claims 29-58 and entry of claims 59-79 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 59 and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Collins et al. (US 3,805,347).

Regarding claim 59, Collins discloses (see figure 2) a semiconductor light-emitting device including a base, a semiconductor light-emitting element (11) secured to the base, a first external terminal (13), a second external terminal (14), and a coating material (22) of glass that covers the light-emitting element. Glass is a recognized ceramic and all ceramics are made of a ceramic precursor.

Regarding claim 64, the glass encapsulant covers all surfaces of the semiconductor except the bottom surface.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 59, 65-68, 71-77, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824).

Regarding claims 59, 66, and 79, Komoto discloses (see figure 41) a semiconductor light emitting device with a lead base (110), a light emitting element (990) and a coating material (142E) made of a dipping resin containing a fluorescent material. (Column 28 lines 50-65). Komoto fails to specify the coating being made of a ceramic. It is known in the art to use glass instead of epoxy for the coating material of a semiconductor light-emitting element. Further glass is a known ceramic as stated above. It has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. Thus, it would have been obvious to one having ordinary skills in the art at the time the invention was made to have the device as disclosed by Komoto comprising a glass coating, since the selection of known materials for a known purpose is within the skill of the art.

Regarding claim 65, Komoto discloses (see figure 41) a semiconductor light-emitting device as described in the rejection of claim 59 above. The device contains external terminals (110 and 120) where one of the terminals (110) forms a concavity that houses the semiconductor (990) and fluorescent resin (142E). The two terminals are electrically connected to the device by

the wires (130). The entire device is surrounded by an encapsulant that acts as a binder for the internal components. (Column 28 lines 50-65).

Regarding claims 67, 68, and 71-73, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 59 above, and additionally states that the coating material (142E) contains a fluorescent substance for converting the majority of the light generated by the semiconductor element into a different wavelength. (Column 29 lines 19-23). The light-emitting semiconductor (990) is constructed from a gallium nitride compound (Column 29 lines 3-6) and emits ultraviolet light shorter than 380nm. (Column 29 lines 23-25). The secondary light emitted from the fluorescent substance is in the visible region and thus at a longer wavelength than the emitted light from the semiconductor (990). (Column 29 lines 14-16).

Regarding claims 74-77, Komoto discloses (see figure 41) a semiconductor light emitting device as described in the rejection of claim 59 above and additionally states that the coating material (142E) is covered by a molding resin (140E). (Column 28 lines 55-56). The molding resin or plastic is an encapsulant that acts as a binder for the internal components and serves to focus the emitted light through a lens affect.

Claim 69 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824) in view of McKenna, Jr. et al. (US 4,234,660).

Regarding claim 69, Komoto discloses (see figure 41) a semiconductor light-emitting device as described in the rejection of claim 59 above. Komoto however does not specify the use

of polymetaloxane adhesive between the semiconductor light emitting element and the base. McKenna however discloses the use of a polymetaloxane adhesive for bonding various substances including substrates. (Column 1 lines 19-21). These adhesive compositions possess little or no color and exhibit improved cohesive strength without loss of tack thus creating a stronger bond that is ideal for optical systems. (Column 1 lines 55-59). Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of a polymetaloxane adhesive, as disclosed by McKenna, into the semiconductor light emitting device as disclosed by Komoto in the rejection of claim 59 above, in order to increase the bonding strength and provide a colorless adhesive.

Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto et al (US 6,340,824) in view of Oshio et al. (US 6,274,890), and further in view of Latz (US 5,043,716).

Regarding claim 78, Komoto discloses (see figure 41) a semiconductor light-emitting device as described in the rejection of claim 59 above. Komoto however does not specify the use of an insulative substrate between the diode and the lead frame, where the insulative substrate has a concavity in the substrate for the coating. Oshio however discloses (see figure 15) the use of an insulative substrate (10) in the form of a molded resin. The molded resin forms the cavity (10a) for the applied coating and acts as the base for the semiconductor element. (Column 5 lines 43-52). Substituting the insulated substrate with build in cavity for the lead frame allows for the use in applications such as printed circuit boards as evidenced by Latz (US 5,043,716) (Column 1 lines 10-14) where pouring the transparent coating into the cavity instead of freely on top of the element allows for easier and cleaner installation, therefore expanding the usability of

the semiconductor light emitting device. Thus, it would have been obvious at the time the invention was made to a person having ordinary skills in the art to incorporate the use of an insulative substrate with cavity, as disclosed by Oshio, into the semiconductor light emitting device as disclosed by Komoto in the rejection of claim 59 above, in order to expand the usability of the device onto printed circuit boards.

Allowable Subject Matter

Claims 60-63 and 70 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 60, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 60, and specifically comprising the limitation a semiconductor light emitting device including a coating made of a material of a glass of a polymetaloxane formed mainly of the metaloxane bond where the coating material adheres directly to the semiconductor light emitting element and electrodes.

Regarding claim 61, claim 61 is allowable for the reasons given in claim 60 because of its dependency status from claim 60.

Regarding claim 62, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 62, and specifically comprising the limitation a semiconductor light emitting device including a coating made of a material of a ceramic where

the ceramic precursor is a polysilazane and where the coating material adheres directly to the semiconductor light emitting element and electrodes.

Regarding claim 63, claim 63 is allowable for the reasons given in claim 62 because of its dependency status from claim 62.

Regarding claim 70, the references of the Prior Art of record fails to teach or suggest the combination of the limitations as set forth in claim 70, and specifically comprising the limitation a semiconductor light emitting device including a coating made of a material of either a glass of a polymetaloxane formed mainly of the metaloxane bond, a gel of a polymetaloxane or a ceramic formed from a ceramic precursor where the coating material adheres directly to the semiconductor light emitting element and electrodes and where an adhesive bonding the semiconductor light emitting element to the base is formed of the same material as the coating material.

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

New grounds of rejection have been made in this action and indication of allowable subject matter has been withdrawn. Therefore this action is made non-final.


Contact Information

Art Unit: 2879

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt P Hodges whose telephone number is (703) 305-4015. The examiner can normally be reached on 7:30 AM to 4:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703) 305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

mph 
August 22, 2003

Joseph Williams
Joseph Williams